

WHAT IS CLAIMED IS:

1. A projection type display device comprising:
an illumination optical system for supplying an
illumination radiation;

5 a polarization splitting/color separating
optical system for polarization-splitting and color-
separating beam from said illumination optical
system;

10 reflection type light valves, each taking a
rectangular shape, for modulating the beam from said
polarization splitting/color separating optical
system in accordance with an image signal and letting
the modulated beams exit;

15 a color synthesizing optical system for color-
synthesizing the beams from said reflection type
light valves;

a light analyzing optical system for analyzing
the beam from said color synthesizing optical system;
and

20 a projection optical system for projecting on a
predetermined surface an image based on the image
signal generated in said reflection type light valves,

wherein when the image signal indicates black,
said color synthesizing optical system and each of
25 said light valve are positioned so that coordinates
in CIE1976UCS chromaticity diagram that show a color
of a predetermined point in the vicinity of an apex

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but inside of the apex of a rectangular display area on the predetermined surface, fall within a distance equal to or less than 0.09 from coordinates in the chromaticity diagram that show a color at the center of said light valve.

2. A projection type display device according to claim 1, wherein when the image signal indicates black, a color separating/synthesizing optical system and each of said light valves are positioned so that coordinates in CIE1976UCS chromaticity diagram that show a color of a predetermined point in the vicinity of an apex but inside of the apex of a rectangular display area on the predetermined surface, fall within a distance equal to or less than 0.04 from coordinates in the chromaticity diagram that show a color at the center of said light valve.

3. A projection type display device according to claim 1 or 2, wherein said reflection type light valves include a reflection type light valve for a blue beam and a reflection type light valve for a long wavelength region, upon which the beam in the longer wavelength region than the blue beam is incident,

said color synthesizing system includes a first prism and a second prism,

said first prism receives an incidence of the beam from said light valve for the long wavelength region and lets the beam exit, and

5 said second prism receives an incidence of the beam from said light valve for the blue beam, then receives an incidence of the beam exiting said first prism, synthesizes the blue beam entering said second prism with the beam in the long wavelength region and lets the synthesized beam exit toward said light
10 detection optical system.

4. A projection type display device according to claim 1 or 2, wherein said color synthesizing optical system includes a prism,

15 said prism has a first surface totally reflecting the beam from said reflection type light valve, and a second surface formed with a dichroic film reflecting the totally reflected beam, and said first surface lets the beam originally coming from
20 said reflection type light valve, which beam is totally reflected by said first surface and reflected by said dichroic film, exit.

5. A projection type display device according to claim 1 or 2, wherein said prism of said
25 synthesizing optical system has an apex angle of 45 degrees or smaller.

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6. A projection type display device according to claim 1 or 2, wherein when the image signal indicates black, said prism of said color synthesizing optical system and each light valve are positioned so that coordinates in CIE1976UCS chromaticity diagram that show a color of any one of points in the rectangular display area on the predetermined surface, fall within a distance equal to or less than 0.09 from coordinates in the chromaticity diagram that show a color at the center of said light valve.

7. A projection type display device according to claim 1 or 2, wherein when the image signal indicates black, said prism of said color synthesizing optical system and each light valve are positioned so that coordinates in CIE1976UCS chromaticity diagram that show a color of any one of points in the rectangular display area on the predetermined surface, fall within a distance equal to or less than 0.04 from coordinates in the chromaticity diagram that show a color at the center of said light valve.

8. A projection type display device according to claim 1 or 2, wherein the predetermined point is a point at which to divide, at a ratio of 9 to 1, a

distance between the position corresponding to the center of said light valve in the rectangular display area on the predetermined surface and the apex of the rectangular display area.

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9. A projection type display device comprising:
an illumination optical system for supplying an illumination radiation;

10 a polarization splitting/color separating optical system for polarization-splitting and color-separating beam from said illumination optical system;

15 reflection type light valves for modulating the beams from said polarization splitting/color separating optical system in accordance with an image signal and letting the modulated beams exit;

a color synthesizing optical system for color-synthesizing the beams from said reflection type light valves;

20 a light analyzing optical system for analyzing the beam from said color synthesizing optical system; and

25 a projection optical system for projecting on a predetermined surface an image based on the image signal generated in each of said reflection type light valves,

wherein when the image signal indicates black,

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said color synthesizing optical system and each of
said light valve are positioned so that coordinates
in CIE1976UCS chromaticity diagram that show a color
of a predetermined point in the vicinity of the
5 farthest point but inside the farthest point from the
center of the predetermined surface, fall within a
distance equal to or less than 0.09 from coordinates
in the chromaticity diagram that show a color at the
center of said light valve.

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